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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/699,158

10/30/2003

Ralf Zuber

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1631

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EXAMINER

WILLS, MONIQUE M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

05/12/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/699,158	<b>Applicant(s)</b> ZUBER ET AL.	
	<b>Examiner</b> Monique M. Wills	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 & 5-17 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11, 16 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 10/30/03 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

This Office Action is responsive to the Amendment filed January 26, 2009. The rejection of claims 1-3, 5-7 & 16-17 under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Pub. 2003/0157397 in view of Fuglevand et al. U.S. Pub. 2004/0214057 and further in view of Mizuno U.S. Pub. 2002/0150810 is maintained.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5-7 & 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Pub. 2003/0157397 in view of Fuglevand et al. U.S. Pub. 2004/0214057 and further in view of Mizuno U.S. Pub. 2002/0150810.

Barton teaches a membrane electrode unit comprising an ionically conductive membrane with affront side and back side, a first catalyst layer on the front side of the membrane, and a first gas distribution substrate associated with the front side of the membrane and the first catalyst layer, a second catalyst layer on the back side of the

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membrane, and a second gas distributor substrate associated with the back side of the membrane and the second catalyst layer. See Figure 2. The catalyst layer on the front side and the catalyst layer on the back side have the same surface dimensions. See Figure 2. The catalyst layer is a noble metal of platinum (par. 86). The conductive membrane is a perfluorinated polymeric sulfonic acid. See paragraph 86. The gas distributor layer is carbon fiber. See paragraph 91.

However, Barton does not expressly disclose gas distributors wherein one layer has smaller dimensions than the other layer. The reference is silent to a portion of the membrane not being supported by the gas diffusion layer.

Fuglevand teaches gas diffusion layers having varying porosity in each layer, suggesting a porosity layer of one electrode different from the porosity of a second electrode. See paragraph 39.

Mizuno teaches that it is well known in the art to employ membrane fuel cells wherein the membrane is not fully supported by the gas diffusion layer. See Figure 1.

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ gas distributors having different dimensions, of Fuglevand in the cell of Barton. In order to facilitate the substantially optimal hydration of the ion exchange membrane.

With respect to the gas diffusion layer not supporting the entire surface of the membrane, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the membrane structure of Mizuno in the fuel cell

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of Barton in view of Fuglevand in order to improve the sealing structure and obviate leakage.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Pub. 2003/0157397 in view of Fuglevand et al. U.S. Pub. 2004/0214057 and further in view of Mizuno U.S. Pub. 2002/0150810 and even further in view of Lertola U.S. Pub. 2005/0255372.

Barton in view of Fuglevand and Mizuno teach a membrane electrode assembly, but is silent to a seal surrounding the gas distribution substrate (claim 8) that is impregnated at the edge region to a depth of 1mm (claim 9) made from specific thermoplastic polymers (claim 10) combined with a plastic frame (claim 11).

However, Lertola teaches a membrane electrode assembly with first and second gas diffusion backing having sealing edges (claim 8). See the abstract. The seal is impregnated into the sealing edges (claim 9) and made of high-density polyethylene (claim 10). See paragraphs 33 & 96. The seal also includes a peripheral frame (claim 11). See paragraph 78.

Barton and Lertola are analogous art from the same field of endeavor, namely fabricating membrane electrode assemblies having first and second gas diffusion layers and catalyst.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the instant invention was made, to apply the seal assembly of Barton in view of Fuglevand and Mizuno, to the membrane electrode assembly of Shibata, in order to provide fluid impermeable seals.

### ***Response to Amendment***

Applicant's arguments filed January 26, 2009 have been considered, but are not persuasive. Applicant asserts that the pending claims are not obvious over Barton et al., because the reference does not disclose a membrane electrode unit having gas distribution layers of different sizes. However, the limitation including "surface dimensions" does not specifically limit the gas distributor plate to smaller size. The term "smaller surface dimensions" may also include any characteristic that modifies space or dimension on the surface. For example, porosity contributes to the surface dimension of the electrode. Surface dimension is a broad term that appears to include any characteristic that modifies space on the surface of the distribution layer. Therefore, Barton modifies the surface dimensions by reducing porosity of the material. The dimensions on the surface of the distribution layer will change according to changing porosity. Therefore, the rejection is made Final. Applicant also argues that none of the

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cited reference consider the aspect of the removal or reduction of the danger of short-circuiting. So long as the claims are anticipated or obvious of the by the prior art, the same objectives of the invention are not required.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Monique M Wills/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795

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